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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,305	09/24/2003	Al Fang	5646-103	3134
20792	7590	08/25/2005	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			LAM, TUAN THIEU	
PO BOX 37428			ART UNIT	
RALEIGH, NC 27627			PAPER NUMBER	

2816

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/671,305	Applicant(s) FANG ET AL.	
	Examiner Tuan T. Lam	Art Unit 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,10-20,23-26 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,10,14-20,23 and 29 is/are rejected.
- 7) ☒ Claim(s) 11-13 and 24-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is a response to the amendment filed 7/20/2005. Claims 1, 3-7, 10-20, 23-26 and 29 are pending and are under examination.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-7, 10, 14-20, 23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hein et al. (US 2003/0085747) in view of Conway et al. (US 20030182335), both are newly cited prior art.

Figure 3 shows a delay locked loop comprising a fine delay unit (delay unit 2 is fine delay) that receives a reference clock signal (CLK^{ref}) and generates a finely variably delayed clock signal therefrom responsive to a first control signal (output from the control device 3), a variable delay circuit (delay unit 1) that receives the finely variably delayed clock signal and generates a coarsely variably delayed output clock signal therefrom responsive to a second control signal (output from the control device) and a phase control circuit (3, 4) that generates the first and second control signals responsive to the output clock signal (CLKOUT) and the reference clock signal.

The differences between Hein et al. and the present invention is that Hein et al. does not show the detailed structure of the fine delay unit (2) using interpolation technique having first

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and second circuits and a phase interpolator as called for in claims 1, 6, 14, 19 and 29. Figure 2 of Conway et al. shows a fine delay unit using interpolation technique with highly accurate delay time comprising first and second delay circuits (16) coupled in series and generating respective first and second delayed clock signals, and a phase interpolator (18, 20) receives the first and second delayed clock circuit and that generates a phase interpolated clock signal therefrom.

Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to implement Hein et al.'s delay unit (2) with the circuit arrangement of Conway et al. for the purpose of providing an accurate delay signal thus preserving the integrity of a signal.

Regarding claim 3, the variable delay circuit of Hein et al. is configured to provide step changes in delay responsive to the second control signal.

Regarding claim 4, figure 4 of Hein et al. shows the variable delay circuit comprises a tapped delay circuit comprising a plurality of delay circuit, switching circuit.

Regarding claim 5, the recited limitations therein are inherently present in figure 3 of Hein et al.

Regarding claims 7 and 20, the combination of Hein et al. and Conway reference shows the phase interpolator as an analog phase interpolator (Saitoh's figure 6).

Regarding claim 10, figure 3 of Hein et al. shows phase detector (4) and a delay control circuit (3).

Regarding claim 15, the combination of Hein et al. and Conway references shows the phase interpolator (10 in Conway's figure 6) is configured to provide fine delay and the tapped delay (delay unit 1 in Hein et al.'s figure 3) is configured to provide coarse delay.

Regarding claim 16, the combination of Hein et al. and Conway references shows the tapped delay comprises a cascade of selectively bypassable fixed delay circuits (Hein et al.'s figure 4).

Regarding claims 17-18, the recited limitations therein are inherently present in the combination of Hein et al. and Conway et al. references.

Allowable Subject Matter

2. Claims 11-13 and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In this regard, applicant's cited prior art has been carefully considered.

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Lam whose telephone number is 571-272-1744. The examiner can normally be reached on Monday to Friday (7:30 am to 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY P. CALLAHAN can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Tuan T. Lam', with a long horizontal stroke extending to the right.

Tuan T. Lam
Primary Examiner
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8/17/2005